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## NOTICE OF ALLOWANCE AND FEE(S) DUE

23364 7590 10/01/2008

BACON & THOMAS, PLLC  
625 SLATERS LANE  
FOURTH FLOOR  
ALEXANDRIA, VA 22314-1176

EXAMINER

GODBOLD, DOUGLAS

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 10/01/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,955

02/23/2004

Chih-Chung Kuo

KUOC3019/EM

7575

TITLE OF INVENTION: AUTOMATIC SPEECH SEGMENTATION AND VERIFICATION METHOD AND SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	01/02/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

23364 7590 10/01/2008

**BACON & THOMAS, PLLC**  
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ALEXANDRIA, VA 22314-1176

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/782,955 02/23/2004 Chih-Chung Kuo KUOC3019/EM 7575

TITLE OF INVENTION: AUTOMATIC SPEECH SEGMENTATION AND VERIFICATION METHOD AND SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$300	\$0	\$1740	01/02/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
GODBOLD, DOUGLAS	2626	704-254000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,955	02/23/2004	Chih-Chung Kuo	KUOC3019/EM	7575
23364	7590	10/01/2008	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314-1176			GODBOLD, DOUGLAS	
			ART UNIT	PAPER NUMBER
			2626	
DATE MAILED: 10/01/2008				

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 688 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 688 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/782,955	KUO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	DOUGLAS C. GODBOLD	2626	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to 06 June 2008.
2. ☒ The allowed claim(s) is/are 1-16, 19 and 20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| <p>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</p> <p>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material</p> | <p>5. <input type="checkbox"/> Notice of Informal Patent Application</p> <p>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date ____.</p> <p>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</p> <p>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</p> <p>9. <input type="checkbox"/> Other ____.</p> |
|---|--|

### **DETAILED ACTION**

1. This Office Action is in response to correspondence filed June 6, 2008. Claims 1-16, 19 and 20 are pending in the application and have been examined.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 6, 2008 has been entered.

#### ***Response to Amendment***

3. The amendment filed June 6, 2008 has been accepted and considered in this office action. Claim 10 has been amended, claim 18 is cancelled and claims 19 and 20 have been added.

#### ***Examiner's Amendment***

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant's representative Benjamin E. Urcia on September 23, 2008.

Amend the application as follows:

5. Amend the Title to read as follows:

“Automatic speech segmentation and verification using segment confidence measures.”

6. Amend claim 10 as follows:

In line 12 of claim 10, replace the word "if" with "to determine whether."

In lines 16 and 21, replace the word “syllable” with “segment.”

In Line 20, replace the word “syllable” with “speech unit.”

7. Amend claim 19 as follows:

In line 12 of claim, replace the word "if" with "to determine whether."

In lines 15 and 20, replace the word “syllable” with “segment.”

In Line 19, replace the word “syllable” with “speech unit.”

8. Amend claim 20 as follows:

In line 12 of claim, replace the word "if" with "to determine whether."

In lines 15 and 20, replace the word “syllable” with “segment.”

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In Line 19, replace the word "syllable" with "speech unit."

***Allowable Subject Matter***

9. Claims 1-16, 19, and 20 are allowed.
10. The following is an examiner's statement of reasons for allowance:
11. Consider claim 1, the prior art of record, specifically Chou et al. and Modi et al. does not specifically teach or fairly suggest the limitations "a segment-confidence-measure verifying step, for verifying segment confidence measures of all cutting points of the N test speech unit segments to determine if the N cutting points of the N test speech unit segments are correct; a phonetic-confidence-measure verifying step, for verifying phonetic confidence measures of the test speech unit segments to determine if the test speech unit segments correspond to the known text script; and a determining step, for determining acceptance of the phonetic unit by comparing a combination of the segment confidence measures reliability and the phonetic confidence measures of the test speech unit segments to a predetermined threshold value; wherein if the combined confidence measure is greater than the predetermined threshold value, the phonetic unit is accepted for output" combined with the other limitations of claim 1.
12. Claims 2-9 are allowed as they further limit claim 1.

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13. Consider claim 10, the prior art of record, specifically Chou et al. and Modi et al. does not specifically teach or fairly suggest the limitations “a segmental verifier for verifying segment confidence measures of all cutting points of the N test speech unit segments to determine if the N cutting points of the N test speech unit segments are correct; a phonetic-confidence-measure verifying step, for verifying phonetic confidence measures of the test speech unit segments to determine if the test speech unit segments correspond to the known text script; and a determining step, for determining acceptance of the phonetic unit by comparing a combination of the segment confidence measures reliability and the phonetic confidence measures of the test speech unit segments to a predetermined threshold value; wherein if the combined confidence measure is greater than the predetermined threshold value, the phonetic unit is accepted for output” combined with the other limitations of claim 10.

14. Claims 11-16 are allowed as they dependent on and further limit claim 10.

15. Consider claim 19, the prior art of record, specifically Chou et al. and Modi et al. does not specifically teach or fairly suggest the limitations “a segmental verifier for verifying segment confidence measures of all cutting points of the N test speech unit segments to determine whether the N cutting points of the N test speech unit segments are correct; a phonetic-confidence-measure verifying step, for verifying phonetic confidence measures of the test speech unit segments to determine if the test speech unit segments correspond to the known text script; and a determining step, for



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determining acceptance of the phonetic unit by comparing a combination of the segment confidence measures reliability and the phonetic confidence measures of the test speech unit segments to a predetermined threshold value; wherein if the combined confidence measure is greater than the predetermined threshold value, the phonetic unit is accepted for output” and

wherein in the segment-confidence-measure step, each segment confidence measure of the test speech unit segment is:

$$\text{CMS} = \max(1 - h(D) - \epsilon g(c(s), f(s)), 0)$$

where  $h(D) = K(\epsilon \sum w_i |d_i - \hat{d}|)$ ,  $D$  is a vector of multiple expert decisions of the cutting point,  $d_i$  is the cutting point,  $\hat{d} = p(D)$  is a final decision of the cutting point,  $K(x)$  is a monotonically increasing function that maps a non-negative variable  $x$  into a value between 0 and 1,  $g(c(s), f(s))$  is a cost function value between a cost function ranging from 0 to 1,  $s$  is a segment,  $c(s)$  is a type category of the segment  $s$  and,  $f(s)$  are acoustic features of the segment;

combined with the other limitations of claim 19.

16. Consider claim 20, the prior art of record, specifically Chou et al. and Modi et al. does not specifically teach or fairly suggest the limitations “a segmental verifier for verifying segment confidence measures of all cutting points of the  $N$  test speech unit segments to determine if the  $N$  cutting points of the  $N$  test speech unit segments are correct; a phonetic-confidence-measure verifying step, for verifying phonetic confidence measures of the test speech unit segments to determine if the test speech unit

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segments correspond to the known text script; and a determining step, for determining acceptance of the phonetic unit by comparing a combination of the segment confidence measures reliability and the phonetic confidence measures of the test speech unit segments to a predetermined threshold value; wherein if the combined confidence measure is greater than the predetermined threshold value, the phonetic unit is accepted for output” and

wherein each phonetic confidence measure of the test speech unit segments is determined by:

$CMV = \min \{LLRI, LLRF, O\}$ ,  $[LLR, = \log P(X, \{H_0\}) - \log P(X_i | H_1)]$  where  $\{ |LLRF = \log P(XF | H_0) - \log P(XF | H_1)$ ,

$X_i$  is initial segment of the test speech unit segment,  $XF$  is final segment of the test speech unit segment,  $H_0$  is a null hypothesis of the test speech unit segment recorded correctly,  $H_1$  is an alternative hypothesis of the test speech unit segment recorded incorrectly, and  $LLR$  is a log likelihood ratio

combined with the other limitations of claim 20.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9/25/2008

/Talivaldis Ivars Smits/  
Primary Examiner, Art Unit 2626

DCG